Version 1.0

ASSESSMENT and QUALIFICATIONS ALLIANCE

General Certificate of Secondary Education

Mathematics 4301

Specification A

Paper 2 Foundation

Mark Scheme

2008 examination - June series

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

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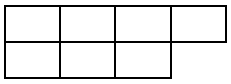
Glossary for Mark Schemes

GCSE examinations are marked in such a way as to award positive achievement wherever possible. Thus, for GCSE Mathematics papers, marks are awarded under various categories.

M	Method marks are awarded for a correct method which could lead to a correct answer.
A	Accuracy marks are awarded when following on from a correct method. It is not necessary to always see the method. This can be implied.
B	Marks awarded independent of method.
M dep	A method mark dependent on a previous method mark being awarded.
B dep	A mark that can only be awarded if a previous independent mark has been awarded.
ft	Follow through marks. Marks awarded following a mistake in an earlier step.
SC	Special case. Marks awarded within the scheme for a common misinterpretation which has some mathematical worth.
oe	Or equivalent. Accept answers that are equivalent. eg, accept 0.5 as well as $\frac{1}{2}$

Paper 2F

Q	Answer	Mark	Comments
1	(£) 1.04	B1	104 p Penalize once for consistent wrong money notation
	(£) 1.60	B1	160 p 1.6 is B0
	(£) 2.64	B1 ft	264 p Allow £ 2.64p Must cross out £ sign if working in p for this mark
2(a)	20	M1	$\frac{2}{10}$ B1 oe B0 for 2 out of 10
2(b)	100 – their (a)	B1ft	80
3(a)	Draw a 3-D sketch with 8 edges, 5 vertices, 5 faces Must show any hidden edges	B1	Accept plan view, accept opposite lines on the base not parallel
3(b)	(Triangular) prism	B1	Triangle prism
	Cuboid or rectangle prism or square prism	B1	(Rectangular) prism. If give prism, prism must qualify one of them for 2 marks If both answers are prism then total is B1 Rectangle cubiod is choice so B0
4(a)		B1	
4(b)	11	B1	
5(a)	A (3, 1) B (4, 3) A ($x = 3$, $y = 1$) B ($x = 4$, $y = 3$)	B2	B1 For each SC1 For both reversed but not (1, 3) and (3, 4) A ($3x$, $1y$) gets SC1 B ($4x$, $3y$)
5(b)	Correct plots	B2	B1 For each ignore extra plots
5(c)	Parallelogram	B1	The shape must be a parallelogram

Q	Answer	Mark	Comments
6(a)	(0).83 or £.83 p	B1	83 p
6(b)	1.21 + 2.31 or digits	M1	Digits 352 seen
	3.52	A1	352 p with £ crossed out. £325 is A0 SC1 For £2.93 or 293 p
6(c)	3 × 0.64	M1	Digits 192 seen
	1.92	A1	192 p with £ crossed out. £192 is A0 SC1 For £1.32 or 132 p
7(a)	6	B1	1 ×2 × 3 = 6 is B0
7(b)	(6 + 3 + 2) × 2	M1	
	22	A1	
8(a)	Correct lines — ＼ |	B3	B1 For each
8(b)	Square added on bottom right	B1	
9(a)	6 × 40 + 25	M1	
	265	A1	4 hr 25 SC1 Digits 265 with no working
9(b)	165 = w × 40 + 25	M1	
	165 – 25 = 40w	M1 dep	(165 – 25) ÷ 40
	3.5	A1	$3\frac{1}{2}$
10(a)	400	B1	
10(b)	150	B1	
10(c)	300	B1	
10(d)	Draws 3 diagrams	B1	Allow 3 circles
11	2 on left, 4 on right, 1 at bottom	B2	B1 For one or two correct

Q	Answer	Mark	Comments
12	34 + 27 + 38 + 27 + 45 + 17	M1	(188) must see at least 3 additions
	Their 188 ÷ 6	M1 dep	oe $\frac{94}{3}$ SC1 173.8 or 174
	31.3 or answer that rounds to 31.3	A1	$31\frac{1}{3}$ 31 with no working is 0 total as could be median 31 with working is A0
13(a)	32.6	B1	
13(b)(i)	29.326	B1	
13(b)(ii)	29.3	B1	
13(b)(iii)	30	B1	30.0 is B0
14(a)(i)	6 × 8 + 7 × 11	M1	
	125	A1	
14(a)(ii)	38 = their (6P) + 7Q	M1	38 = 6 × 4 + 7Q 10 + 7Q = 38 38 = 64 + 7Q 46 + 7Q = 38
	2	A1	
14(b)	5a or 6b	M1	
	5a + 6b	A1	
15	75 = 4 × 5 × h	M1	75 ÷ (4 × 5)
	3.75	A1	$3\frac{3}{4}$

Q	Answer	Mark	Comments
16(a)	<table><tr><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>2</td><td>4</td><td>6</td><td>8</td></tr><tr><td>3</td><td>6</td><td>9</td><td>12</td></tr><tr><td>4</td><td>8</td><td>12</td><td>16</td></tr></table>	B1	
16(b)	$\frac{4}{16}$	B2 ft	$\frac{1}{4}$, 0.25, 25% oe B1ft For 4 as numerator in valid prob. B1 For 16 as denominator in valid prob. SC1 For $\frac{8}{24}$ $\frac{4}{16}$ = 4 is B0 B1 For 1 in 4, 4 out of 16 B0 For 4:16, 4 to 16, 4-16
17(a)	4205 – 4154	M1	Take 49 as MR
	Their 51 × 104	M1 dep	Their 51 × 1.04
	5304	A1	Ignore £ if this is on answer line
	53.04	A1	
17(b)	97 × 62/100	M1	Build up method is OK 62 × 97% is M0
	£60.14	A1	6014p with £ crossed out
17(c)	39 – 34	M1	
	Their 5 ÷ 34 × 100	M1 dep	M2 for $\frac{39}{34}$ – 1) × 100
	14.7	A1	15 with working T and I must get 14.7
18(a)	500 × 1.87	M1	
	935	A1	
18(b)	200 ÷ 1.87	M1	
	106.95	A1	106, 107

Q	Answer	Mark	Comments
19	EBC = 180 – 110	M1	70 seen unless clearly from wrong method
	360 – (their70 + 90 + 120)	M1 dep	Split into 2 triangles is OK but angles in triangle BDC must add to 180
	80	A1	Answer may be on diagram but penalize 1 mark if contradicted on answer line
20(a)	150	B1	
20(b)	10	B1	
20(c)	Their 150 ÷ 3	M1	
	50	A1 ft	SC1 Their 150 ÷ 180 (= 0.83) or Their 150 ÷ 170 (= 0.88)
21	580 ÷ 51 or 370 ÷ 32	M1	Allow scaling provided both calcs. are scaled
	11.37(…) or 11.56(…)	A1	Accept 11.4 or 11.6, 11.3 or 11.5 or scaled digits Allow 11 and 12 with working
	Beryl and both answers above	A1	
Alt 21	580 ÷ 51 or 370 ÷ 32 or scaled	M1	SC3 For 51 ÷ 580 and 32 ÷ 370
	11.37 × 32 (= 363.8) or 11.56 × 51 (= 589.6) or scaled	A1	0.0879… 0.088 and 0.0865… 0.086
	Beryl and comparison 363 < 370 or 589 > 580	A1	Beryl because she uses less litres per km Must mention litres per km or 1/km
22(a)	Rotation as single transformation	B1	Turn is B0
	(0,0) or origin or O	B1	
	90° (anticlockwise)	B1	$\frac{1}{4}$ turn or 270 clockwise
22(b)	Correct reflection	B2	B1 For reflection in $x = -1$ B1 For $y = -1$ drawn B1 For shape A reflected in $y = -1$

Q	Answer	Mark	Comments
23(a)	58	B1	
23(b)(i)	30	B1	
23(b)(ii)	$\frac{64}{200}$	B1	oe 0.32
24	$5y$	B1	$5y - 0$, $5y + 0$
	$4y - 1$ + their $5y = 5$	M1	$9y - 1 = 5$
	$\frac{2}{3}$	A1	oe 0.66, 0.67, $\frac{6}{9}$
25	$6^2 + 9^2$	M1	
	$\sqrt{117}$	M1 dep	For squaring and adding then showing need to square root $\sqrt{(12 + 18)} = \sqrt{30}$ is M0
	$3\sqrt{13}$ or 10.8…	A1	Accept 11 with working (min. $6^2 + 9^2$)
26	$170 \div 20 \times 12$ or $170 \div 20 \times 8$	M1	
	Adam 102 and Brenda 68	A1	SC1 For both reversed
27(a)(i)	125	B1	1.25 m
27(a)(ii)	140.6	B1	
27(b)	Frequency polygon plotted at (125, 16), (135, 38), (145, 26) (155, 14), (165, 6) or histogram	B2	Ignore any lines before 125 or after 165 –1eeoo Any consistent misplotting is 1 error eg, upper class Plots but no lines is 1 error Accuracy of lines or plots $\frac{1}{4}$ sq. or 1 mm Histogram only SC1